UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/791,879	03/04/2004	Takuya Nagai	118886	2001

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OLIFF & BERRIDGE, PLC
P.O. BOX 320850
ALEXANDRIA, VA 22320-4850

EXAMINER
KHAN, OMER S

ART UNIT	PAPER NUMBER
2612	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

OfficeAction25944@oliff.com
jarmstrong@oliff.com

	Application No.	Applicant(s)
	10/791,879	NAGAI ET AL.
Office Action Summary	Examiner	Art Unit	
	Omer S. Khan	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _03 May 2010_.

2a) ☒ This action is **FINAL.**   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _28,31-35 and 39-42_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _28, 31-35, and 39-42_ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1.   This communication is in response to amendments filed on 12/17/2009.

2.   Claims 1-7, 10-14, 22-26, 28, 31-35, 39-42, and 45-47 are pending in this

application. Claims 1-7, 10-14, 22-26, and 45-47 stand withdrawn from consideration.

3.   Applicant's argument with respect to frequency hopping was considered;

however, the argument was not persuasive. Nysen discloses frequency hopping spread

spectrum signal may be used, which will have extremely high maximum frequency

change rates during hops, and a heterodyne receiver topology is preferred, with an

intermediate frequency (IF), for example 900 MHz, mixed with the return signal and a

hopping frequency of between 5-25 MHz subsequently mixed with the output of the IF

mixer, col. 37 l. 36-49. Nonetheless, in an analogous art, Chang shows frequency

hopping in an Orthogonal Frequency Division Multiplexing (OFDM) method is a multi-

carrier transmission method which divides an entire usable frequency band into a

predetermined number of narrow bands, modulates the sub-carriers of the narrow

bands in parallel, and transmits the modulated sub-carriers. To each sub-carrier, low-

rate data, which has a small amount of data, are allocated, FIG. 10 shows a pattern the

sub-carrier group of one comb symbol performs frequency hopping to an adjacent sub-

carrier group, and FIG. 11 presents a pattern the sub-carrier group of one comb symbol

performs frequency hopping randomly. frequency hopping patterns that are appropriate

when each cell uses a different frequency hopping pattern in the cellular environment of

FIG. 21, See Chang ¶ 10, 70, 127, and 165.

4.   Applicant's argument with respect to "a first distribution pattern in which the

individual frequency utilization ratio is relatively high in the relatively low frequency

channels and a second distribution pattern in which the individual frequency utilization

ratio is relatively high in the relatively high frequency channels, the first distribution

pattern so that a center frequency of the distribution of the frequency utilization ratio of

the subcarrier signal is lowered," is not persuasive. It is Examiner's interpretation of the

claim that individual frequency utilization ratio is relatively high in the low and high

frequency channels so that a center frequency of the distribution of the frequency

utilization is low, See MacLellan fig 8 , that shows frequency distribution ($f_1 + f_2$) can be

considers low channel utilization and frequency distribution ($f_1 + f_3$) and frequency

distribution ($f_1 + f_4$) can be consider high channel utilization, and f_1 is the Carrier wave,

i.e. a carrier frequency. MacLellan is not sending data near center frequency; therefore,

a center frequency of the distribution of the frequency utilization is low, Col. 11 l. 15-30.

Further more, Carlson show a notch filter being used to eliminate the noise $omega_1$ and

$omerga_2$, and the frequencies between the band is being utilized, a digital notch filter for

each center frequency may be implemented as shown in equation (8), filtered feedback

signal 78 includes a first attenuated frequency band 94 near frequency $omega_1$, and a

second attenuated frequency band 96 near frequency $omega_2$, See fig 4 and 5, col. 10,

l 46.

5.   Applicant's argument with respect to "is lowered, when a supply voltage of said

battery cell detected by the power-source- information detecting portion is lower than a

predetermined threshold value," is not persuasive. Nysen discloses that the frequency

divider 580 receives the signals from the <u>voltage-controlled oscillator 520</u> and divides

these signals to produce clock signals at the second frequency such as forty kilohertz

(40 kHz), col. 31 l. 25-34; nonetheless, Nysen and the others don't exactly discusses

the monitoring at least two states of the battery. In an analogous art, Janning discloses

a battery-powered RF transponder system to monitor the whereabouts of livestock.

Janning discloses microprocessor 281 checks for a low battery condition and causes

LED 308 to blink if battery 138 is determined to be low. This is accomplished simply by

reading input port RB4 at pin 10 of microprocessor 281 and generating an intermittent

output signal at output port RA2 in the event the status of port RB4 indicates that low

voltage detector 307 detects a voltage of less than 2.35 volts at power supply rail 283,

See Janning ¶ 137. Rodger discusses a use of upper bands of a subscan, higher bands

carry less RF energy than the lower bands; therefore, using the frequency band will help

the signal reach tags that are farther away will less bandwidth and will save power

consumption. See Rodger, col. 11 l. 66 – col. 13 l. 23.

Claim Rejections - 35 USC § 112

6.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of
> making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the
> art to which it pertains, or with which it is most nearly connected, to make and use the same and shall
> set forth the best mode contemplated by the inventor of carrying out his invention.

7.   Claims 28, 31-35, and 39-42 are rejected under 35 U.S.C. 112, first paragraph,

as failing to comply with the written description requirement. The claim(s) contains

subject matter which was not described in the specification in such a way as to

reasonably convey to one skilled in the relevant art that the inventor(s), at the time the

application was filed, had possession of the claimed invention. No support is found for

the newly claimed limitation; "a frequency-utilization-ratio setting portion operable to set

a distribution of a frequency utilization ratio which is a ratio of time period during which

each frequency channel is used as a hopping frequency of a subcarrier signal in which

a frequency hopping is implemented and which is used to modulate said main carrier."

Applicant is stating in the remarks that support can be found in ¶ 208 of the

specification. Applicant's ¶ 208 states that the individual endpoint devices 3a, 3b, 3c

require different lengths of time for full charging, since the interrogating signals received

by the individual endpoint devices 3a-3c have different intensity values depending upon

the different distances to the interrogator 2. Accordingly, the reflected subcarrier signals

are transmitted from the individual endpoint devices 3a-3c at different times. This

means that the transponders are responding in different time slots so there is no

collision. Thus, the transponder response may have different delay. However this does

not equate to applicants claimed limitation stated above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as
> set forth in section 102 of this title, if the differences between the subject matter sought to be
> patented and the prior art are such that the subject matter as a whole would have been obvious
> at the time the invention was made to a person having ordinary skill in the art to which said

subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8.   Claims 28, 31-33, 35 and 39-42, are rejected under 35 U.S.C. 103(a) as being unpatentable over Nysen in US 6107910, and in view of Rodger in US 6362737, in view of MacLellan in US 5940006, in view of Carlson in US 6963184, in view of Janning in US 20010040508, and further in view of Chang in US 20060072649.

Consider claim 28, Nysen discloses an endpoint device for responding to an interrogator after receiving an interrogating signal containing a main carrier by transmitting a reflected signal generated by modulating the main carrier with appropriate information, said endpoint device comprising: **(See Nysen, Abstract, col. 6 l. 43- 59, col. 31 l. 54-65, where Nysen discusses a transponder or a tag for receiving an interrogation signal and transmitting a backscatter in a main carrier to an interrogator or reader).** MacLellan discloses a frequency determining portion operable on the basis of the distribution of the frequency utilization ratio set by said frequency-utilization-ratio setting portion FURSP, **(See MacLellan, col. 12 l. 5-30, where MacLellan discusses the frequency synthesizer determines the frequency of the sub carrier signal based on the frequency set by the processor).** MacLellan discloses the FURSP to determine a frequency of said subcarrier signal by random selection within said predetermined range of frequency; **(See MacLellan, col. 11 l. 31- 50, where MacLellan discusses the frequency synthesizer determines the frequency of the sub carrier signal by random selection within the defined range of frequency, i.e. freq hopping).** Rodger discloses a battery cell; and a power-source-

information detecting portion operable to detect the operating state of said battery cell,
the operating condition of the battery cell being at least able to power the endpoint
device, **(See Rodger col. 9 l. 57-67, col. 11-55-59, and col. 41 l. 55-59, where he
discusses that transceiver may include a battery).** MacLellan discloses wherein said
FURSP is operable on the basis of the operating state of said battery cell detected by
said power-source-information detecting portion to set the distribution of the frequency
utilization ratio of the subcarrier signal, **(See MacLellan, col. 9 l. 1-26, col. 11 l. 31-50,
col. 13 l. 27-45, where MacLellan discusses the frequency synthesizer sends a
uplink signal when a battery has some power, i.e. the operating state of the
battery cell, if the battery is dead then there is no signal from a battery driven
tag).**

Nysen in view of MacLellan and Change discloses a frequency-utilization-ratio
setting portion operable to set a distribution of a frequency utilization ratio which is a
ratio of time period during which each frequency channel is used as a hopping
frequency of a subcarrier signal in which a frequency hopping is implemented and which
is used to modulate said main carrier.

Nysen discloses that the signal processor performs a time-to-frequency
transform (Fourier transform) on the received signal, to assist in determination of the
various delay parameters, col. 7 l. 63-66, the signal processor may be time-division
multiplexed to handle a plurality of S3 signals from different antennas, the time delay
and amplitude modification may also have differing dependency on frequency, col. 13 l.
24-27 & 53-55, the system shown in FIG. 39d includes the voltage-controlled oscillator

in the phase-locked loop 520 and a frequency divider 580. The frequency divider 580

receives the signals from the voltage-controlled oscillator 520 and divides these signals

to produce clock signals at the second frequency such as forty kilohertz (40 kHz), col.

31 l. 25-34, and frequency hopping spread spectrum signal may be used, which will

have extremely high maximum frequency change rates during hops, and a heterodyne

receiver topology is preferred, with an intermediate frequency (IF), for example 900

MHz, mixed with the return signal and a hopping frequency of between 5-25 MHz

subsequently mixed with the output of the IF mixer, col. 37 l. 36-49.

MacLellan discusses Time Division Multiple Access wherein time is divided into

time slots, col. 4 l. 50+. MacLellan also teaches FDMA wherein frequency is divided,

given a single frequency source, and program controllable divider circuits or a PLL-

based frequency synthesizer, the Frequency Synthesizer 906 could, under control of the

Processor 905, synthesize more than one Subcarrier 908 frequency; thus this technique

could synthesize the Subcarrier Frequencies f.sub.2, f.sub.3, and f.sub.4, col.11 l.25-30.

MacLellan also teaches CDMA wherein a subcarrier frequency could be

synthesized in hardware using a crystal oscillator and frequency divider circuits, col. 13

l. 56-62.

The system is design to set the distribution frequency in ratio such as channels

by selecting one of predetermine frequency channel within the entire frequency range of

the subcarrier signals, (See MacLellan, Fig 8, col. 12 l. 5-30) over a predetermined

range of frequency of the subcarrier signal that consists of a plurality of mutually

adjacent frequency channels; **(See MacLellan, col. 12 l. 50-53, where MacLellan**

discusses the sub carrier signal consists of a multiple adjacent frequency

channels in a predetermined range).

In an analogous art, Chang shows frequency hopping in an Orthogonal

Frequency Division Multiplexing (OFDM) method is a multi-carrier transmission method

which divides an entire usable frequency band into a predetermined number of narrow

bands, modulates the sub-carriers of the narrow bands in parallel, and transmits the

modulated sub-carriers. To each sub-carrier, low-rate data, which has a small amount of

data, are allocated, FIG. 10 shows a pattern the sub-carrier group of one comb symbol

performs frequency hopping to an adjacent sub-carrier group, and FIG. 11 presents a

pattern the sub-carrier group of one comb symbol performs frequency hopping

randomly. frequency hopping patterns that are appropriate when each cell uses a

different frequency hopping pattern in the cellular environment of FIG. 21, See Chang ¶

10, 70, 127, and 165.

It would have been obvious to an ordinary skilled artisan at the time of invention

to divide the frequency and use different sub frequencies in the hop patterns to

communicate with the tags in each cell; therefore, avoiding collision.

Nysen discloses that the frequency divider 580 receives the signals from the

voltage-controlled oscillator 520 and divides these signals to produce clock signals at

the second frequency such as forty kilohertz (40 kHz), col. 31 l. 25-34,; nonetheless,

Nysen and the others don't exactly discusses the monitoring at least two states of the

battery. In an analogous art, Janning discloses a battery-powered RF transponder

system to monitor the whereabouts of livestock. Janning discloses microprocessor 281

checks for a low battery condition and causes LED 308 to blink if battery 138 is

determined to be low. This is accomplished simply by reading input port RB4 at pin 10

of microprocessor 281 and generating an intermittent output signal at output port RA2 in

the event the status of port RB4 indicates that low voltage detector 307 detects a

voltage of less than 2.35 volts at power supply rail 283, See Janning ¶ 137.

It would have been obvious to an ordinary skilled artisan at the time of invention

to modify the invention above and include a battery monitoring indicator so the user can

replace or recharge the battery before the battery completely runs out and the

transponder becomes non-responsive do to the lack of power; Therefore, providing

convenience to the user.

MacLellan discusses a first distribution pattern in which the individual frequency

utilization ratio is relatively high in the relatively low frequency channels and a second

distribution pattern in which the individual frequency utilization ratio is relatively high in

the relatively high frequency channels, the first distribution pattern so that a center

frequency of the distribution of the frequency utilization ratio of the subcarrier signal is

lowered.

It is Examiner's interpretation of the claim that individual frequency utilization

ratio is relatively high in the low and high frequency channels so that a center frequency

of the distribution of the frequency utilization is low, See MacLellan fig 8 , that shows

frequency distribution (f_1 + f_2) can be considers low channel utilization and frequency

distribution (f_1 + f_3) and frequency distribution (f_1 + f_4) can be consider high channel

utilization, and f_1 is the Carrier wave, i.e. a carrier frequency. MacLellan is not sending

data near center frequency; therefore, a center frequency of the distribution of the frequency utilization is low, Col. 11 l. 15-30.

Carlson is being used to show a notch filter being used to eliminate the noise $omega_1$ and $omerga_2$, and the frequencies between the band is being utilized, a digital notch filter for each center frequency may be implemented as shown in equation (8), filtered feedback signal 78 includes a first attenuated frequency band 94 near frequency $omega_1$, and a second attenuated frequency band 96 near frequency $omega_2$, See fig 4 and 5, col. 10, l 46.

It would have been obvious to an ordinary skilled artisan at the time of invention to filter out portion of frequencies to remove the noise created by adjacent channels thus improve the quality of the signal. Applicant may also see the reference cited in the conclusion section for better understanding of prior art.

Roger teaches to use particular distribution channels, when a supply voltage of said battery cell detected by the power-source-information detecting portion is lower than a predetermined threshold value, **(See Rodger, col. 11 l. 66 – col. 13 l. 23, where Rodger discusses a use of upper bands of a subscan, higher bands carry less RF energy than the lower bands; therefore, raising the frequency will help the signal reach tags that are farther away and save power consumption).**

Consider claim 39, Nysen discloses a communication system comprising an interrogator having a transmitting portion operable to transmit an interrogating signal containing a main carrier, and a plurality of endpoint devices each operable to receive

the interrogating signal and respond to the interrogator with a reflected signal which is

generated by modulating the main carrier with appropriate information, wherein an

improvement comprises, **(See Nysen, Abstract, col. 6 l. 43- 59, col. 31 l. 54-65,**

where Nysen discusses a set of transponders or tags for receiving an

interrogation signal and transmitting a backscatter in a main carrier to an

interrogator or reader). MacLellan discloses the main carrier is modulated over a

predetermined range of frequency of the subcarrier signal which consists of a plurality of

mutually adjacent frequency channels, **(See MacLellan, col. 12 l. 50-53, where**

MacLellan discusses the sub carrier signal consists of a multiple adjacent

frequency channels in a predetermined range). MacLellan discloses a frequency

determining portion operable on the basis of the distribution of the individual frequency

utilization ratio set by said individual frequency utilization ratio setting portion, **(See**

MacLellan, col. 12 l. 5-30, where MacLellan discusses the frequency synthesizer

determines the frequency of the sub carrier signal based on the frequency set by

the processor). MacLellan discloses the tag is design to determine a frequency of said

subcarrier signal, by random selection within said predetermined range of frequency,

(See MacLellan, col. 11 l. 31-50, where MacLellan discusses the frequency

synthesizer determines the frequency of the sub carrier signal by random

selection within the defined range of frequency, i.e. freq hopping). Nysen discloses

a battery cell, **(See Nysen, col. 13 l. 38-40, where Nysen discusses tag comprises a**

power source or obtain energy from the RF signal where the coil becomes the

power source). Nysen discloses a power source information detecting portion operable

to detect supply voltage information indicative of a supply voltage of said battery cell,

(See Nysen, col. 13 l. 38-40, col. 35 l. 59-67, where discusses the RF signal

contains RF energy and signal strength translates the power information).

Nysen in view of MacLellan and Change discloses the endpoint device including

an individual frequency utilization ratio setting portion operable to set a distribution of an

individual frequency utilization ratio which is a ratio of a time period during which each

frequency channel is used as a hopping frequency of a subcarrier signal in which a

frequency hopping is implemented and which is used to modulate said main carrier.

Nysen discloses that the signal processor performs a time-to-frequency

transform (Fourier transform) on the received signal, to assist in determination of the

various delay parameters, col. 7l. 63-66, the signal processor may be time-division

multiplexed to handle a plurality of S3 signals from different antennas, the time delay

and amplitude modification may also have differing dependency on frequency, col. 13 l.

24-27 & 53-55, the system shown in FIG. 39d includes the voltage-controlled oscillator

in the phase-locked loop 520 and a frequency divider 580. The frequency divider 580

receives the signals from the voltage-controlled oscillator 520 and divides these signals

to produce clock signals at the second frequency such as forty kilohertz (40 kHz), col.

31 l. 25-34, and frequency hopping spread spectrum signal may be used, which will

have extremely high maximum frequency change rates during hops, and a heterodyne

receiver topology is preferred, with an intermediate frequency (IF), for example 900

MHz, mixed with the return signal and a hopping frequency of between 5-25 MHz

subsequently mixed with the output of the IF mixer, col. 37 l. 36-49.

MacLellan discusses Time Division Multiple Access wherein time is divided into time slots, col. 4 l. 50+. MacLellan also teaches FDMA wherein frequency is divided, given a single frequency source, and <u>program controllable divider circuits</u> or a PLL-based frequency synthesizer, the Frequency Synthesizer 906 could, under control of the Processor 905, synthesize more than one Subcarrier 908 frequency; thus this technique could synthesize the Subcarrier Frequencies f.sub.2, f.sub.3, and f.sub.4, col.11 l.25-30.

MacLellan also teaches CDMA wherein a subcarrier frequency could be synthesized in hardware using a crystal oscillator and frequency divider circuits, col. 13 l. 56-62.

The system is design to set the distribution frequency in ratio such as channels by selecting one of predetermine frequency channel within the entire frequency range of the subcarrier signals, (See MacLellan, Fig 8, col. 12 l. 5-30) over a predetermined range of frequency of the subcarrier signal that consists of a plurality of mutually adjacent frequency channels; **(See MacLellan, col. 12 l. 50-53, where MacLellan discusses the sub carrier signal consists of a multiple adjacent frequency channels in a predetermined range).**

In an analogous art, Chang shows frequency hopping in an Orthogonal Frequency Division Multiplexing (OFDM) method is a multi-carrier transmission method which divides an entire usable frequency band into a predetermined number of narrow bands, modulates the sub-carriers of the narrow bands in parallel, and transmits the modulated sub-carriers. To each sub-carrier, low-rate data, which has a small amount of

data, are allocated, FIG. 10 shows a pattern the sub-carrier group of one comb symbol

performs frequency hopping to an adjacent sub-carrier group, and FIG. 11 presents a

pattern the sub-carrier group of one comb symbol performs frequency hopping

randomly. frequency hopping patterns that are appropriate when each cell uses a

different frequency hopping pattern in the cellular environment of FIG. 21, See Chang ¶

10, 70, 127, and 165.

It would have been obvious to an ordinary skilled artisan at the time of invention

to divide the frequency and use different sub frequencies in the hop patterns to

communicate with the tags in each cell; therefore, avoiding collision.

Nysen discloses the said interrogator including an overall frequency utilization

ratio determining portion operable to determine a distribution of an overall frequency

utilization ratio of the reflected signal received from said plurality of endpoint devices,

(See Nysen, col. 38 l. 41-46, where Nysen discusses the interrogator is design to

set the distribution frequency in ratio using the backscatter information). Nysen

discloses an endpoint device monitoring portion operable on the basis of said supply

voltage information received from said power source information detecting portion, **(See**

Nysen, Fig 36-38, col. 38 l. 34-40, where Nysen discusses the interrogator is

capable of monitoring a distance between the interrogator and the tag based on

signal strength). Nysen discloses the interrogator's EPDMP is capable to determines

one of a plurality of predetermined supply voltage ranges in which the supply voltage of

said battery cell detected by said power source information detecting portion of said

each endpoint device falls, **(See Nysen, Fig 36-38, col. 34 l. 48 col. 35 l. 38, col. 38 l.**

34-40, where Nysen discusses the distance is measured based on the different levels of the signal strength). Nysen discloses a switching information generating portion operable on the basis of the distribution of said overall frequency utilization ratio determined by said overall frequency utilization ratio determining portion, **(See Nysen, col. 38 l. 41-46, where Nysen discusses a processor for generating an interrogation signal based on distribution frequency).** Rodger discloses the processor is operable on the basis of the result of determination by said endpoint device monitoring portion, **(See Rodger, col. 11 l. 66 – col. 12 l. 16, where Rodger in view of Nysen discusses a band is determined based on the signal strength that is inversely proportional to the distance).** MacLellan discloses the interrogator is design to generate switching information on the basis of which said individual frequency utilization ratio determining portion of said each endpoint device sets the distribution of said individual frequency utilization ratio of the subcarrier signal, **(See MacLellan, Fig 9, col. 11 l. 31-50, where MacLellan discusses the tag is design to determining the frequency of a sub carrier signal within the frequency band).** MacLellan discloses the said transmitting portion of said interrogator being operable to transmit said interrogating signal containing said main carrier and said switching information generated by said switching information generating portion, **(See MacLellan, Fig 9 and 10, col. 11 l. 31-50, where MacLellan discusses the interrogator comprises a transmitter and the interrogator determines the transmission frequency of a sub carrier signal within the frequency band).** MacLellan discloses the said individual frequency utilization ratio setting portion being operable to set the distribution of said

individual frequency utilization ratio of the subcarrier signal of said each endpoint

device, **(See MacLellan, col. 12 l. 5-30, where MacLellan discusses the frequency**

synthesizer capable of determining the individual frequency of the sub carrier

signal). on the basis of said switching information generated by said switching

information generating portion and said supply voltage of said battery cell detected by

said power source information detecting portion, **(See MacLellan, col. 12 l. 5-30,**

where MacLellan discusses the frequency synthesizer determines the frequency

of the sub carrier signal based on the frequency set by the processor after the

comparison of signal's strength).

Nysen and the others don't exactly discusses the monitoring at least two

states of the battery. In an analogous art, Janning discloses a battery-powered RF

transponder system to monitor the whereabouts of livestock. Janning discloses

microprocessor 281 checks for a low battery condition and causes LED 308 to blink if

battery 138 is determined to be low. This is accomplished simply by reading input port

RB4 at pin 10 of microprocessor 281 and generating an intermittent output signal at

output port RA2 in the event the status of port RB4 indicates that low voltage detector

307 detects a voltage of less than 2.35 volts at power supply rail 283, See Janning ¶

137.

MacLellan discusses the individual-frequency-utilization-ratio setting portion

being operable to set, of a first distribution pattern in which the individual frequency

utilization ratio is relatively high in the relatively low frequency channels and a second

distribution pattern Pt in which the individual frequency utilization ratio is relatively high

in the relatively high frequency channels, the first distribution pattern.

It is Examiner's interpretation of the claim that individual frequency utilization

ratio is relatively high in the low and high frequency channels so that a center frequency

of the distribution of the frequency utilization is low, See MacLellan fig 8 , that shows

frequency distribution ($f_1 + f_2$) can be considers low channel utilization and frequency

distribution ($f_1 + f_3$) and frequency distribution ($f_1 + f_4$) can be consider high channel

utilization, and f_1 is the Carrier wave, i.e. a carrier frequency. MacLellan is not sending

data near center frequency; therefore, a center frequency of the distribution of the

frequency utilization is low, Col. 11 l. 15-30.

Carlson is being used to show a notch filter being used to eliminate the noise

omega$_1$ and omerga$_2$, and the frequencies between the band is being utilized, a digital

notch filter for each center frequency may be implemented as shown in equation (8),

filtered feedback signal 78 includes a first attenuated frequency band 94 near frequency

omega$_1$, and a second attenuated frequency band 96 near frequency omega$_2$, See fig 4

and 5, col. 10, l 46+.

It would have been obvious to an ordinary skilled artisan at the time of invention

to filter out portion of frequencies to remove the noise created by adjacent channels or

carrier wave thus improve the quality of the signal. Applicant may also see the reference

cited in the conclusion section for better understanding of prior art.

Roger teaches to use particular distribution channels, when a supply voltage of

said battery cell detected by the power-source-information detecting portion is lower

than a predetermined threshold value, **(See Rodger, col. 11 l. 66 – col. 13 l. 23, where Rodger discusses a use of upper bands of a subscan, higher bands carry less RF energy than the lower bands; therefore, raising the frequency will help the signal reach tags that are farther away and save power consumption).**

Consider claim 31, Rodger discloses the endpoint device according to claim 28, wherein said frequency-utilization-ratio setting portion is operable to raise a center frequency of the distribution of the frequency utilization ratio of the subcarrier signal, when a supply voltage of said battery cell detected by the power-source-information detecting portion is higher than a predetermined threshold value, **(See Rodger, col. 11 l. 66 – col. 13 l. 23, where Rodger discusses a use of upper bands of a subscan, higher bands carry less RF energy than the lower bands; therefore, raising the frequency will help the signal reach tags and save power consumption).**

Consider claim 32, MacLellan discloses the endpoint device according to claim 28, wherein said frequency-utilization-ratio setting portion is operable to select one of a plurality of different frequency-utilization-ratio distribution patterns each of which represents a relationship between said plurality of mutually adjacent frequency channels and said frequency utilization ratio of the subcarrier signal, said endpoint device including a memory storing data table representative of said different frequency-utilization-ratio distribution patterns, said frequency determining portion being operable to hop the frequency of the subcarrier signal according to the selected one of said

different frequency-utilization-ratio distribution pattern, **(See MacLellan, Fig 8, col. 12 l. 5-30, where MacLellan discusses the system is design to frequency channel within the entire frequency range of the subcarrier signals, the tag comprises the memory containing an algorithm for frequency distribution and the frequency hopping of the sub carrier signal using the algorithm).**

Consider claim 33, the combination of Nysen and Rodger discloses, the endpoint device according to claim 28, wherein said frequency-utilization-ratio setting portion is operable to set the distribution of the frequency utilization ratio of the subcarrier signal so that a center frequency of said distribution is lower when said battery cell is a primary battery cell, than when said battery cell is other than said primary battery cell, **(See Nysen, col. 12 l. 45-54 and col. 13 l. 38-40, where Nysen discusses the transponder may and active such as a tag with an internal battery or a passive transponder a tag without internal battery and it is known to use lower frequency band with passive transponder because they totally depend on RF energy of a signal).**

Consider claim 35, Nysen discloses the endpoint device according to claim 28, wherein said frequency-utilization-ratio setting portion is operable to set the distribution of the frequency utilization ratio of the subcarrier signal, by changing at least an amount of data transmitted with said reflected signal and a time period during which said reflected signal is transmitted, each time the reflected signal having a selected one of

said mutually adjacent frequency channels is transmitted, **(See Nysen, col. 11 l. 5 –col. 12 l. 64, where Nysen discusses the system is design to set or shift the subcarrier frequency by changing the length of transmission of the backscatter signal i.e. changing the period of the duty cycle by changing the frequency, every time the backscatter signal transmitted one of the adjacent frequency channels).**

Consider claims 40 and 41, MacLellan discloses the communication system according to claim 36, wherein said switching-information generating portion is operable to generate the switching information for raising a center frequency of the distribution of said individual frequency utilization ratio of the subcarrier signal of said each endpoint device, when said overall-frequency-utilization ratio determining portion determines that said overall frequency utilization ratio of said reflected signals in low frequency channels of said predetermined range of frequency of the subcarrier signal is higher than a predetermined threshold value, **(See MacLellan, col. 11 l. 5- col. 12 l. 63, where MacLellan, discusses the processor to adjust the center frequency of the subcarrier signal according to the channels that are receiving the backscatter signals of a high and low frequency subcarrier signal).**

Consider claim 42, Nysen discloses the endpoint device according to claim 39, wherein said plurality of endpoint devices include at least one first endpoint device wherein a primary battery cell is provided as said battery cell, and at least one second endpoint device wherein a secondary battery cell is provided as said battery cell, [the

secondary battery is provided in addition to a primary battery cell in the second endpoint

device?], said switching-information generating portion being operable to generate the

switching information that causes said individual-frequency-utilization-ratio setting

portion of each of said at least one first endpoint device to set the distribution of said

individual frequency utilization ratio of the subcarrier signal so that a center frequency of

the distribution of said individual frequency utilization ratio of the subcarrier signal of

said each first endpoint device is lower that that of said each second endpoint device,

(See reference , col. 13 l. 37- col. 14 l. 63, and col. 35 l. 40 - col. 36 l. 25,where

Nysen discusses the some tags may include more than power source, i.e. battery

cell, and the processor identifies the tags and set the channel of the carrier signal

lower for a single cell tags in order to deliver more RF energy than tags with a

secondary power source).

9.   Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nysen in

US 6107910, and further in view of Rodger in US 6362737 and in view of MacLellan in

US 5940006, in view of Janning in US 20010040508, in view of Chang in US

20060072649, and further in view of Takatori in US 20010020897.

        Consider claim 34, Takatori discloses the endpoint device according to claim 28,

further comprising a solar cell as a power source device, **(See Takatori, abstract and**

PP 26).

Consider claim 34, Nysen does not specifically discloses the endpoint device comprising a solar cell as a power source device; nevertheless, it would be obvious to one of ordinary skill in the art at the time of invention to modify the invention of Nysen and design the tag with a solar cell as a power source as taught by Takatori to design a system in an effort to reduce the cost of power consumption by the tag, **(See Takatori PP 13-14).**

Conclusion

10.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Perahia, Elda et al. (US 6088416); discusses the frequency reuse pattern distributes communications beams covering the same bandwidth over a wider physical

area, thereby reducing co-channel interference. Adjacent beams that cover overlapping

bandwidths are orthogonal and therefore minimize adjacent channel interference.

Shattil, Steve (US 6008760); discusses techniques for reducing co -channel

interference include frequency-separation.

Meyer, John D. et al. (US 5821470); discusses a circuit having a high frequency

channel connected to the first transducer means and a low frequency channel

connected to the second transducer means. The high frequency channel includes high-

pass filter means, and a center frequency located above the operating range of the

second transducer means.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Omer S. Khan whose telephone number is (571)270-

5146. The examiner can normally be reached on M-F 7:30 - 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Brian A. Zimmerman can be reached on 571-272-3059. The fax phone

number for the organization where this application or proceeding is assigned is 571-

273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Omer S Khan/
Examiner, Art Unit 2612

/Brian A Zimmerman/
Supervisory Patent Examiner, Art Unit 2612